

CLAIMS

What is claimed is:

Sub A4 1. A system for monitoring ingress in an HFC network having a hub, a domain manager located for monitoring the status of the HFC network, a fiber-optic line, and a node located along the fiber-optic line, the monitoring system comprising:

a BTP remotely located at or downstream from the node, the BTP including an ingress monitoring interface connected to the HFC network to detect ingress in the HFC network downstream from the interface and a modem in communication with the domain manager to transmit detected ingress information.

2. The system of claim 1, wherein the HFC network further includes a tap connected to the HFC network and located downstream from the node, and the ingress-monitoring interface and modem are connected to the HFC network at the tap.

3. The system of claim 2, wherein the tap includes an upstream-facing directional coupler and a downstream-facing directional coupler, the ingress-monitoring interface being connected to the downstream-facing directional coupler and the modem being connected to the upstream-facing directional coupler.

4. The system of claim 3, wherein the upstream-facing directional coupler is located downstream from the downstream-facing directional coupler.

5. An HFC network having a hub, a plurality of lines to transmit RF signals, and a system for monitoring ingress, comprising:

a tap having an RF line to transmit RF signals, an upstream-facing directional coupler located on the RF line, and a downstream-facing directional coupler located on the RF line; and

a BTP including an ingress monitoring interface connected to the downstream-facing directional coupler to detect ingress in the HFC network downstream from the ingress monitoring interface and a modem to communicate with the domain manager to transmit detected ingress information.

6. The HFC network of claim 5, wherein the tap further includes an AC line for transmitting AC power, and the BTP receives AC power from the AC line.

7. The HFC network of claim 6, wherein the AC power is transmitted from the AC line to the BTP by a twisted pair.

8. The HFC network of claim 5, wherein the downstream-facing coupler is located upstream from the upstream-facing coupler.

9. The HFC network of claim 5, wherein the BTP is located within a building and receives AC power from the building.

10. The HFC network of claim 5, further comprising an amplifier located on the HFC network immediately upstream from the tap.

11. The HFC network of claim 5, wherein the plurality of lines comprise a fiber-optic line, a node coupled to the fiber-optic line, and at least one branch extending downstream from the node, and the tap is connected to the branch and located downstream from the node.

12. A system for monitoring ingress in an HFC network having a hub, a domain manager, and a plurality of lines to transmit RF signals, the system comprising:

a BTP adapted to be connected to the HFC network and located remotely with respect to the hub, the BTP including a downstream-facing directional coupler, an upstream-facing directional coupler, an ingress monitoring interface connected to the downstream-facing directional coupler to detect ingress in the network, and a modem connected to the upstream-facing directional coupler to communicate with the domain manager.

13. The system of claim 12, wherein the BTP further comprises a power conversion unit for converting AC power to DC power.

14. The system of claim 12, further comprising an amplifier located on the network immediately upstream from the BTP.

15. An HFC network having a system for monitoring ingress, comprising:

a node having a branch extending downstream therefrom, a fiber-optic line extending upstream therefrom, a downstream-facing directional coupler located on the branch, and an upstream-facing directional coupler; and

a BTP connected to the node and having an ingress-monitoring interface and a modem, the modem being connected to the upstream-facing directional coupler, and the ingress monitoring interface being connected to the downstream facing directional coupler to monitor ingress in the branch.

16. The HFC network of claim 15, wherein the upstream-facing directional coupler is located downstream from the downstream-facing directional coupler.

17. The HFC network of claim 15, wherein the node includes a plurality of branches and a downstream-facing directional coupler located on each branch, and the ingress monitoring interface is connected to each downstream-facing directional coupler to independently monitor ingress in each of the branches.

18. An HFC network having a system for monitoring ingress, comprising:
an amplifier having at least one branch extending downstream therefrom and a downstream-facing directional coupler located on the branch, and an upstream-facing directional coupler; and

a BTP connected to the node and having an ingress-monitoring interface and a modem, the modem being connected to the upstream-facing directional coupler, and the ingress monitoring interface being connected to the downstream facing directional coupler to monitor ingress in the branch.

19. The HFC network of claim 18, wherein the upstream-facing directional coupler is located downstream from the downstream-facing directional coupler.

20. The HFC network of claim 19, wherein the amplifier includes a plurality of branches and a downstream-facing directional coupler located on each branch, and the ingress monitoring interface is connected to each downstream-facing directional coupler to independently monitor ingress in each of the branches.